

## Work Order ID 60713

July 20, 2010 12:04:06 PM

Item ID: D6102-013

Revision ID:

Item Name: Saddle Billet

Start Date: 7/20/10

Start Qty: 20.00

Required Date: 8/03/10

Req'd Qty: 20.00

Reference:

Approvals: Process Plan: CZ Date: 10/7/20 Tooling:

Date:

QC:

Date:

SPC (Y/N):

Date:

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr

Revision Nbr

D6102

Rev D

0.00

100



Purchasing

Purchasing

PURCHASING

Memo

0.00

Issue P/O: 12019 ☐ a) Description: Aluminum Billet ☐ b) 7.000" x 6.500" x 2.000" thick ☐ c) Tolerance on all dimensions is +0.06/0.00 ☐ d) Grain direction along 6.500" length ☐ e) Material: 6061-T6/T6511 (QQ-A-250/11 or QQ-A-200/8) ☐ Material release certifi

110



Packaging

Packaging

Receive &amp; Inspect for Damage &amp; Mat'l Certs

0.00

Memo

0.00

Ensure material certification is attached

120



QC

Quality Control

QC6- Inspect dimensions to drawing

0.00

Memo

0.00

Check certification to Dwg D6102 for compliance

Accept



Setup Start

Stop

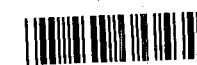


Cust Item ID:

Customer:

Run Start

Stop



CZ 10/7/20 (20)

R 10/8/3 (20)

(420)

8 10/06/10

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:			WORK ORDER NON-CONFORMANCE (NCR)					
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Work Order ID 60713

July 20, 2010 12:04:06 PM

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Item ID: D6102-013

Accept

Setup Start

Revision ID:

Stop

Item Name: Saddle Billet

Start Date: 7/20/10 Start Qty: 20.00

Cust Item ID:

Required Date: 8/03/10 Req'd Qty: 20.00

Customer:

Reference:

Run Start

Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

130

Identify as per dwg & Stock Location: *cwe*

0.00



Packaging

Memo

0.00

Packaging

*SA 10/08/11*

*20* *7*

140

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

*10/08/11* *df*

*CZ10/8/11*

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

July 20, 2010 12:04:05 PM

Page 1

Work Order ID: 60713



Parent Item: D6102-013



Parent Item Name: Saddle Billet

Start Date: 7/20/10

Required Date: 8/03/10

Start Qty: 20.00

Required Qty: 20.00

Comments: IPP Rev:A New Issue 06-07-03 JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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D6102-013P

Purchased

No

110

Each

0.0000

1

20



*P 10/8/3 (20)*

6061-T6 7.0x6.5x2.0

W/O:			WORK ORDER CHANGES					
DATE	STEP		PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

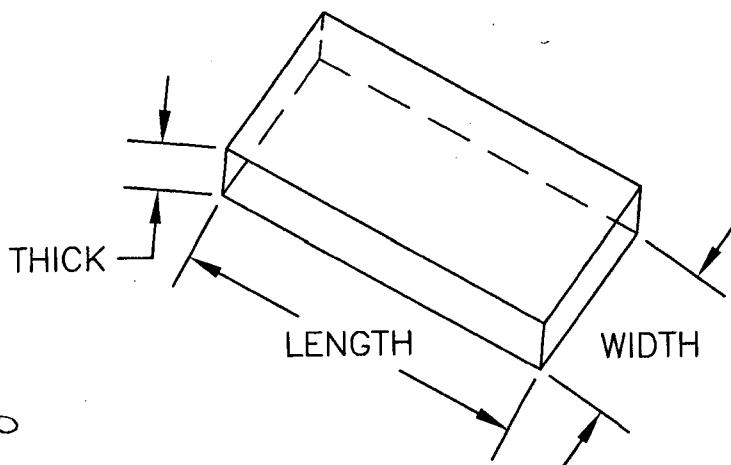
NCR:			WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP		Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
				Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

**DART**

DESIGN #	DRAWN BY PH	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
CHECKED CP	APPROVED #	DRAWING NO. D6102	Rev. D SHEET 1 OF 1
DATE 06.06.30		TITLE SADDLE BILLET, 6061	SCALE NTS
A	01.03.30	NEW ISSUE	
B	03.10.20	ADD D6102-005/-007/-009	
C	04.08.25	ADD D6102-010/-011	
D	06.06.30	ADD D6102-013	

## SPECIFICATION CONTROL DRAWING



CL-1017120  
W10.60713

**RELEASED**

06.08.15 #

PURCHASE MATERIAL ACCORDING TO THE FOLLOWING TABLE. SPECIFY ALLOY, LENGTH x WIDTH x THICK (+0.06/-0.00), AND GRAIN DIRECTION AS SHOWN.

TOLERANCE ON ALL DIMENSIONS IS +0.06/-0.00.

ALL DIMENSIONS ARE IN INCHES.

Part No.	Alloy	Length	Width	Thick	Grain Direction
D6102-001	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.880	6.250	2.000	Along 7.880 Length
D6102-003	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.000	6.250	2.000	Along 6.000 Length
D6102-005	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	47.85	15.250	1.000	Along 47.85 Length
D6102-007	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.500	7.000	2.500	Along 7.500 Length
D6102-009	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	11.000	6.000	5.000	Along 11.000 Length
D6102-010	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	7.950	8.250	2.500	Along 7.950 Length
D6102-011	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.500	8.250	2.500	Along 6.500 Length
D6102-013	6061-T6/T651 (QQ-A-250/11 or QQ-A-200/8)	6.500	7.000	2.000	Along 6.500 Length

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Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577

\*\*\*OUTSTANDING PO REPRINT\*\*\*

Purchase Order IDPO12019

Purchase Order Date 6/03/10

PO Print Date 7/20/10

Page Number 2 of 2

Order From :

VC-MET001

METAUX CASTLE  
A.M. CASTLE & CO. (CANADA) INC. - BOX B9204 PO BOX 9100  
TORONTO, ON M4Y 3A5  
CA

Contact Name		Buyer	Chantal Lavoie
Vendor Phone	514 694 9575	Requisition Nbr	
Vendor Fax	514 695 3281	Tax Resale Nbr	10127-2607
Vendor Account Nbr		Terms	Net 30
		Currency	CAD
		FOB	

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty	Unit Price	Extended Price
3	D6101-005P	7075-T7351 8.25X5.0X2.5	10/29/10 Yes	75.00 Each	\$61.0000	\$4,575.00
Line Total:						\$4,575.00
4	D6101-013P	Saddle billet	10/29/10 Yes	20.00 Each	\$125.0000	\$2,500.00
Line Total:						\$2,500.00
5	D6102-013P <i>release 20</i>	6061-T6 7.0x6.5x2.0	10/29/10 Yes	20.00 Each	\$32.0000	\$640.00
Line Total:						\$640.00
Outstanding PO Total:						\$14,562.20

MATERIAL CERTIFICATION  
REQ'D UPON DELIVERY

PO Instructions: REF: P/O 8393

Change Nbr: 3

Change Date: 7/06/10

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable



**Castle Metals®**

A. M. Castle &amp; Co.

**PACKING SLIP**

Page 1 of 1

Shipment No:431002

<b>Ship From:</b> Castle Metals MONTREAL 835-SELKIRK AVENUE POINTE CLAIRE, QUEBEC H9R 3S2		<b>Sold To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		<b>Ship To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7		<b>Deliver To:</b> DART AEROSPACE LTD 1270 ABERDEEN HAWKESBURY, ON K6A 1K7 CA	
<b>Date Shipped</b> 30-JUL-10	<b>F.O.B.</b> ORIGIN	<b>Freight Terms</b> Prepaid		<b>Carrier</b> MANITOULIN	<b>BOL No</b> 431002-2		

<b>Shipment Details</b>	<b>Final Destination Branch - MON</b>
-------------------------	---------------------------------------

<b>Order No</b> 885141	<b>Line No</b> 1	<b>Item No</b> 8641.MO	<b>Description</b> 2.0000.PL.6061.T651.ALUMINUM.48.5000.144.5000 CUT 2SIDED TO 7 IN ( + .0620/- .0000 IN (GRAIN TO RUN ALONG 6.5")) X 6.5 IN ( + .0620/- .0000 IN (GRAIN TO RUN ALONG 6.5")) ALUMINUM PLATE SAW				
<b>Purchase Order No</b> 12019		<b>Part Number</b> YOUR ITEM NUMBER: D6102-013		<b>Ordered Qty</b> 20 PCS		<b>Invoice Qty</b> 20 PCS	
<b>Details</b>							
<b>Delivery No.</b> 36401380	<b>Mill</b>	<b>Heat Number</b> 492249A8	<b>Mech Id</b>	<b>PCS</b> 20	<b>Width (IN)</b>	<b>Length (IN)</b>	<b>Shipped Qty (LBS)</b> 182.28

These commodities/technologies are subject to US Export Administration & US State Dept. Regulations and, if intended for export, were/are exported thereunder. Diversion contrary to US Law is Prohibited.

We hereby certify the material covered by this certification conforms in accordance with the above specifications and has been found to meet the applicable requirements for the material, including any specifications forming a part of the description. Test reports are on file subject to examination. All claims for defective material are waived unless made in writing to A.M. Castle & Co. within 60 days of the shipment. Material cut to the correct size, or material cut by the customer cannot be returned for credit.

Reviewed by Authorized Castle Metals Representative:

Date:

CERTIFICAT D'ANALYSE DU MATERIEL  
CERTIFICATE OF MATERIAL TEST REPORT



Castle Metals®

**CLIENT:**

DART AEROSPACE LTD  
1270 ABERDEEN  
HAWKESBURY, ON  
K6A 1K7

METALX CASTLE CERTIFIE QUE LES INFORMATIONS  
SUIVANTES SONT CONFORMES AUX CERTIFICATS  
CHIMIQUE ET METALLURGIQUE QUI NOUS ONT ÉTÉ  
FOURNIS PAR NOS FOURNISSEURS ET GARDÉS EN  
DOSSIER À NOTRE BUREAU.

CASTLE METALS CERTIFIES THAT THE FOLLOWING  
INFORMATION IS TAKEN FROM CHEMICAL AND METAL-  
LURGICAL TEST REPORTS FURNISHED TO US BY OUR  
SUPPLIER AND WHICH ARE ON FILE IN OUR OFFICE.

NOUS CERTIFIONS QU'À NOTRE CONNAISSANCE, IL N'Y A  
AUCUN MERCURE OU MATÉRIEL RADIOACTIF UTILISÉ  
LORS DE LA COULÉE OU TRANSFORMATION DE L'ACIER  
VENDU PAR NOTRE COMPAGNIE.

WE CERTIFY THAT WE HAVE NO KNOWLEDGE OF MERCURY  
OR RADIOACTIVE MATERIAL USED IN THE MELTING OR  
PROCESSING OF STEEL SOLD BY OUR COMPANY.

MANUFACTURIER(MOULIN)/MANUFACTURER(MILL) KAISER ALUMINUM		NO. COMM. CLIENT/CUSTOMER ORDER NO. 12019		NO. RÉQUISITION CLIENT/CUSTOMER REQUISITION NO.	
IAC 8641	NO. COULÉE/HEAT NUMBER 492249A8	NO. COMM./ORDER NO. 885141	LIGNE/LINE NO. 1	Q'TÉ EXPÉDIÉE/Q'TY SHIPPED 182.28 LBS	DATE LIVRÉE/SHIP.

2" PLATE 6061-T651 ALUMINUM

AMS QQ-A-250/11 REV A

20 PCS 7" X 6.5"

CHRISTIANE ROUCHER  
QUALITY MANAGER

A.M. CASTLE & CO. (CANADA) INC

*Christiane Roucher*

## SHIP TO:

A M CASTLE & CO  
3400 NO. WOLF ROAD  
FRANKLIN PARK, IL 60131

# KAISER ALUMINUM

Trentwood Works - Spokane, WA 99215

Phone: (800) 367-2586

## CERTIFIED TEST REPORT

Serial Number

4184855

## SOLD TO:

AM CASTLE & CO- SOLD TO  
3400 NO. WOLF ROAD  
FRANKLIN PARK, IL 60131

CUSTOMER PO NUMBER: 36577		WORK PACKAGE:		CUSTOMER PART NUMBER: 8641 AMC A96061-161			SHIP RUN/LOAD: 101731/11		GOV'T CONTRACT NUMBER:	
KAISER ORDER NO: 1093456		LINE ITEM: 4	SHIP DATE: 12-FEB-2010		ALLOY: 6061	CLAD: BARE	TEMPER: T651	PRODUCT DESCRIPTION: KaiserSelect® Precision Plate		
WEIGHT SHIPPED: 11172 LB		QUANTITY: 8 PCS EST		B/L NUMBER: 2026034		GAUGE: 2.0000 IN		DIAMETER/WIDTH: 48.500 IN		LENGTH: 144.500 IN

## Certified Specifications

AMS 4027/RevN  
ASTM B 209/Rev07

AMS-QQ-A-250/11/RevA

ASME SB 209/Rev2004

Test Code: 1511

## Test Results

Lot: 492222A5 Cast 765

Drop 76

Ingot 4

(ASTM E8/B557)

(EN 2002-1)

Tensile:	Temper	Dir / # Tests	Ultimate KSI (MPA)	Yield KSI (MPA)	Elongation %
	T651	LT / 2 (Min:Max)	48.5 : 48.6 (334 : 335)	43.9 : 43.9 (303 : 303)	13.5 : 13.9

(ASTM E1251)

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER
Actual	0.68	0.5	0.30	0.09	1.0	0.19	0.16	0.02	0.01	0.00	TOT 0.04

Lot: 492249A8 Cast 765

Drop 73

Ingot 2

(ASTM E8/B557)

(EN 2002-1)

Tensile:	Temper	Dir / # Tests	Ultimate KSI (MPA)	Yield KSI (MPA)	Elongation %
	T651	LT 2 (Min:Max)	48.0 : 48.2 (331 : 332)	44.2 : 44.7 (305 : 308)	13.5 : 14.0

(ASTM E1251)

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER
Actual	0.69	0.5	0.28	0.10	1.0	0.17	0.12	0.01	0.01	0.00	TOT 0.04

**KAISER  
ALUMINUM**Trentwood Works - Spokane, WA 99215  
Phone: (800) 367-2586**CERTIFIED TEST REPORT**Serial Number  
4184855

Lot: 492250A6 Cast 765

Drop 73

Ingot 3

(ASTM E8/B557)

(EN 2002-1)

Tensile:	Temper	Dir / # Tests	Ultimate KSI (MPA)	Yield KSI (MPA)	Elongation %
	T651	LT / 2 (Min:Max)	49.0 : 49.0 (338 : 338)	44.2 : 44.4 (305 : 306)	13.0 : 14.9

(ASTM E1251)

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER
Actual	0.69	0.5	0.28	0.10	1.0	0.17	0.12	0.01	0.01	0.00	TOT 0.04

**ALLOY LIMITS**

Chemistry:	SI	FE	CU	MN	MG	CR	ZN	TI	V	ZR	OTHER	MAX
6061 MIN	0.40	0.0	0.15	0.00	0.8	0.04	0.00	0.00	0.00	0.00	EACH	0.05
MAX	0.8	0.7	0.40	0.15	1.2	0.35	0.25	0.15	0.05	0.05	TOT	0.15

Aluminum Remainder

**TEST NOTES**

6061 sheet or plate certified to AMS 4025, AMS 4026, or AMS  
4027 also meets applicable requirements of AMS-QQ-A-250/11  
Rev.A.

**Castle Metals FP**

HEAT NUMBER 492249-A8  
MECHANICAL ID \_\_\_\_\_  
ITEM CODE 8641  
LOT NUMBER \_\_\_\_\_  
PO NUMBER 36577  
RECEIPT DATE 2-16-10  
SUPPLIER Kaiser  
SPECIFICATION \_\_\_\_\_  
LCS No  
COMMENT \_\_\_\_\_  
APPROVED Am

**CERTIFICATION**

KAISER ALUMINUM FABRICATED PRODUCTS, LLC (KAISER) HEREBY CERTIFIES THAT METAL SHIPPED UNDER THIS ORDER WAS MELTED IN THE UNITED STATES OF AMERICA OR A QUALIFYING COUNTRY PER DFARS 225.872-1(a), WAS MANUFACTURED IN THE UNITED STATES OF AMERICA, AND MEETS THE REQUIREMENTS OF DFARS 252.226 FOR DOMESTIC CONTENT. THIS MATERIAL HAS BEEN INSPECTED, TESTED, AND FOUND IN CONFORMANCE WITH THE REQUIREMENTS OF THE APPLICABLE SPECIFICATIONS AS INDICATED HEREIN. ALL METAL WHICH IS SOLUTION HEAT TREATED COMPLIES WITH AMS 2772. ANY WARRANTY IS LIMITED TO THAT SHOWN ON KAISER'S STANDARD GENERAL TERMS AND CONDITIONS OF SALE. TEST REPORTS SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF KAISER ALUMINUM FABRICATED PRODUCTS, LLC LABORATORY. THE RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THE CERTIFICATE MAY BE PUNISHED AS A FELONY UNDER FEDERAL LAW. ISO-9001:2000 CERTIFIED.

BILL POYNOR, LABORATORIES SUPERVISOR

